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穀 粒 焼 成 方 法

發明の性質及目的の要領

本發明は上下二つ割りに作れる扁平小容器内に適量の穀粒を置き並べたる後之を密閉し極短時間高温に加熱しつゝ該容器内を加圧して急速に之を減壓することを特徴とする穀粒焼成方法に係り其目的とする所は短時間内に穀粒を膨脹せしむると同時に互に接着せしめて1枚の板状をなし消化良好にして香氣ある製品を得んとするにあり

圖 面 の 略 解

第1圖は本發明の實施に用うる扁平小容器の断面圖にして第2圖は之が加熱装置の正面圖なり

發明の詳細なる説明

耐壓容器内に米、麥、トウモロコシ等の穀粒を入れて密閉し之を加熱して内部の空氣を膨脹せしめ或程度に壓力上昇せるときを見計り急速に蓋を開くときは容器内の高壓空氣は爆發と共に急膨脹し穀粒は内芯より破裂して所謂花咲き狀となることは周知に屬す此方法にあつては1回の處理穀粒の量に比し比較的大なる容器と加熱装置とを要し1回の操業に10分内外を必要とし且つ穀粒は膨脹後も粒々分離するが故に之を携行又は食事に便する爲め塊狀にせんとするときは更に壓縮加工するか或は飴砂糖の類にて固着せざるべからず本發明は穀粒を扁平減少なる容器内にて加熱すると同時に加壓して瞬間に容器内を膨脹に要する壓力に高め數秒の後急速に容器内の壓力を去ることにより穀粒を膨脹せしむるものにして容器減少なるが爲め穀粒は其熱可塑性に基き膨脹と同時に粒々相接着して1枚の薄板狀となる本發明の方法は前記公知の膨脹法に比し僅かに數秒の加熱をなすに過ぎざるが故に穀粒の有するビタミン等の營養分子を破壊することなく又膨脹後壓縮又は接着加工する事なくして食事及携行に便なる製品を得るの利あり

今本發明の方法を圖面に就きて説明すべし此方法の實施に當りては上下二つ割りに作り之を重合したるとき内部を密閉し且つ加熱し傳る扁平小容器と之を加熱する装置とを要す第1圖はかかる容器の一例を示す即ち1及2は上下の型金にして上型には突出部又下型には此突出部と同形の凹所3を有し兩者を正しく重合するときは其周縁は密に嵌合して空氣の流通を殆ど遮断するものとす4は型金の把手なり第2圖に於て5は熱盤6は之に支持せらるる熱盤なり機構には把手輪7にて廻轉し得る螺旋軸8あり其下端に押板9を有す熱盤6と機構5との間に熱盤加熱用の熱源を裝置するものにして図は煤爐10を使用する例を示せり

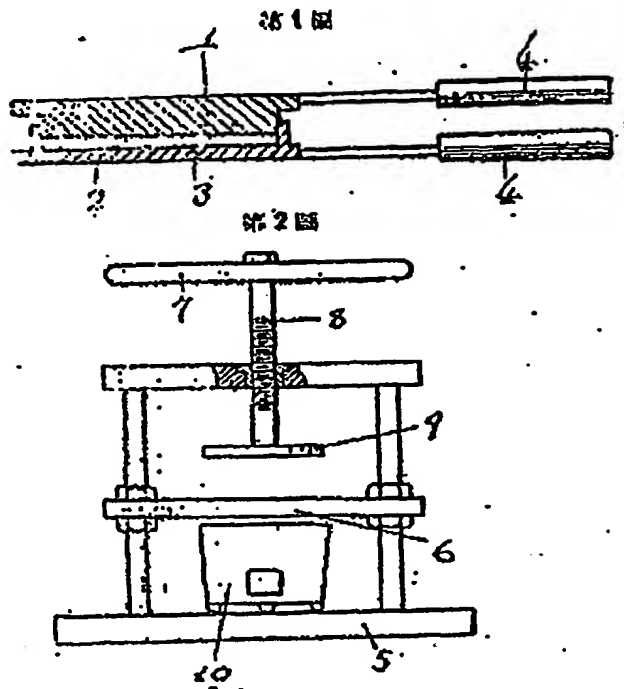
今實施の一例を示せば先づ加熱装置の熱盤上に型金をおきて熱盤下より之を攝氏 350度前後に加熱しおき下型金の凹所3内に適量(直徑10センチの凹所内に米粒10グラム内外)の穀粒を1粒並べに入れ上型金を正しく之に重合し手早く把手輪を廻して押板を下げ型金を1平方吋につき約100ポンド(直徑10センチの型金に對し約1200ポンド)の壓力にて熱盤上に壓迫す然るときは凹所3内の空氣は自由に室外に出づること能はず高温のため膨脹すると共に上型金の突出部の進入により内部に同一の壓力を生ずべし此時直ちに把手輪を廻回して押板の壓迫を解放すれば高壓空氣の急膨脹のため爆發と共に上型金は押上げられ穀粒は急膨脹して内芯より破裂し而かも凹所3内にて互に判合いて接着し1枚の煎餅狀となるべし

本發明方法にありては穀粒容器は小形なるが故に耐壓のために特に大なる強度を要せず操業時に壓力計の使用を不必要とし加熱装置も極めて簡單なり又1回の操業は僅々10數秒に過ぎずして従来の煎餅燒きに比し遙に能率良好なり殊に穀粒より其

食・直ちに煎餅状の製品を得る事は従来の膨脹法
又は煎餅焼法にて夢想だにせられざりし所にして
雑種の穀類の食用を必要とする現時に於て極めて有
用なる發明なりと信ず

特許請求の範圍

前記目的を以て本文に記すが如く上下二つ割りに
作れる扁平小容器内に適量の穀粒を平均に置き並
べたる後之を密閉し極短時間高温に加熱しつつ
加壓し次で急速に減壓することを特徴とする穀粒
焼成方法



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Patent No. 176375

Method of Baking Grains

SUMMARY OF THE INVENTION: THE ASPECT AND OBJECTIVE

The present invention relates to a method of baking grains comprising the steps of arranging a suitable quantity of grains within a small flat container which is configured to be divided into upper and lower portions, sealing said container after the arranging step, pressurizing the inside of said container while heating the same to a high temperature in a very short period of time, and reducing the pressure rapidly after the pressurizing step. An objective of the present invention is to form one piece of plate-shaped food made from grains by expanding the grains in a short period of time with the grains adhered together while at the same time providing a product having good digestion and fragrance.

BRIEF EXPLANATION OF THE DRAWING

Fig.1 is a cross-sectional view illustrating a small flat container used for the present invention; and

Fig.2 is a front view illustrating a heating device.

DETAILED DESCRIPTION OF THE INVENTION

It is known that, by sealing grains such as rice, wheat, corn, or the like in a pressure container, heating it to expand the air therein, and opening the container rapidly at the right time when the pressure rises to a certain degree, the pressurized air in the container expands rapidly with a blasting sound and the grains burst from their inner cores to assume a so-called bloomed state. In the method mentioned above, a bigger container and a heating device compared to the quantity of the grains to be processed at a time are necessary

and around 10 minutes is necessary as well for one operation. Also, when the grains are made to be in an aggregated form for carrying or eating purposes because the grains may be separated individually after the expansion, it becomes necessary to perform a further compression process or stick the grains together with candy sugar or the like. The present invention comprises the steps of pressurizing the grains in a small flat and narrow container simultaneously with heating it to increase the pressure inside the container instantly to the pressure necessary for expansion of the grains, and expanding the grains by removing the pressure inside the container after a few seconds. Since the container is narrow, the grains will become one thin-plate shape with individual grains adhering together simultaneously with the time of the expansion based on the grains' thermo plasticity. The method of the present invention, since it requires only a few seconds of heating compared to said known grain expanding method, has the advantages that little nutritious elements such as vitamins contained in the grains are destroyed and that convenient products for eating and carrying are obtained without the compression or adhesion process after the expansion.

Now, the method of the present invention will be explained by referring to the drawings. To implement the present method, there will be required a small flat container that is configured to be divided into the upper and lower portions and able to seal and pressurize the inside of the container, and a heating device. Fig.1 shows one example of such a container. Thus, 1 and 2 are an upper and a lower metallic molds respectively where the upper mold has a projection part and the lower mold has a concavity 3 having the same shape as said projection part. When the lower mold is properly superimposed by the upper mold, both peripheries of both parts are tightly fitted to almost block air circulation. 4 is a handle of the metallic mold. In Fig.2, 5 is a machine base and 6 is a heating plate supported on the base. A machine frame has a threaded shaft 8 which is rotatable by a handle 7. On a lower end of the

threaded shaft is mounted a pressing plate 9. Between the heating plate 6 and the machine base 5 is installed a heat source for heating the heating plate where a portable cooking stove 10 is used as an example in the figure.

Now one embodiment will be described. First, the metallic molds are placed on the heating plate of the heating device where the molds are preheated to around 350°C from beneath the heating plate. Then, a proper quantity of the grains (about 10 grams more or less of rice grains within a concavity of 10 cm in diameter) is placed in a one-grain row within the concavity 3 of the lower metallic mold, and the lower metallic mold is properly superimposed by the upper metallic mold which is followed by a quick rotation of the handle to lower the pressing plate to press the molds against the heating plate with the pressure of about 100 pounds per square inch (about 1200 pounds for a mold of 10 cm in diameter). In that moment, the air within the concavity 3 cannot escape from the chamber freely and expands due to the high temperature. At the same time, the air will generate the same pressure as mentioned above inside the chamber due to progression of the projection part of the upper mold into the chamber. Immediately at this moment, releasing the pressure on the pressing plate by reversing the handle causes the upper metallic mold to be pushed upward due to sudden expansion of the high pressure air with a blasting sound where the grains will expand rapidly and explode from inner cores thereby also pressing and adhering together within the concavity 3 to form one piece of Japanese cracker.

In the method of the present invention, the container for the grains does not need to have particularly large compressive strength because of its small size, nor is use of a pressure gauge necessary during the operation, thereby making the heating device very simple. Also, it takes only 10 seconds or so for one operation, and therefore efficiency is far better compared to the prior art Japanese-cracker baking method. Particularly, It was beyond the wildest dream of those skilled in prior art grain expansion methods or Japanese-

cracker baking methods to obtain a Japanese-cracker type product directly and immediately from the grains, and it is believed that the present invention is extremely useful in the times when foods from hybrid grains are needed.

CLAIMS

A method of baking grains as described in the specification with objectives indicated therein comprising the steps of;

arranging a suitable quantity of grains evenly within a small flat container which is configured to be divided into upper and lower portions,

sealing said container after the arranging step,

pressurizing the inside of said container while heating the same to a high temperature in a very short period of time, and

reducing the pressure rapidly after the pressurizing step.